

CLAIMS

WHAT IS CLAIMED IS:

1. A transformerless photovoltaic system comprising:
a bipolar photovoltaic array; and
a full-bridge inverter electrically coupled to said bipolar photovoltaic array, said full bridge inverter comprising first and second legs arranged to energize at least two phases of a grid electrically coupled to said photovoltaic system, wherein switching signals applied to switching devices in each of said first and second legs may be adjusted relative to one other to reduce ripple current therein.
2. The photovoltaic system of claim 1 wherein each of said first and second legs comprises two switching devices in a series circuit.
3. The photovoltaic system of claim 1 wherein each of said first and second legs comprises first and second pairs of switching devices in respective series circuit and a respective pair of clamping diodes coupled so that none of the first and second pairs of switching devices carries more than a voltage generated by any one photovoltaic sources that comprise the bipolar array.
4. The photovoltaic system of claim 3 wherein said first and second pairs of switching devices comprise switching devices having relatively lower voltage ratings, as compared to inverter legs comprising two switching devices in series circuit.
5. The photovoltaic system of claim 1 further comprising a respective filter comprising a capacitor and an inductor, each said filter coupled to one of said legs to remove ripple current therein.

6. The photovoltaic system of claim 5 wherein said switching devices may be operated at switching frequencies that are sufficiently high to enable reduction in the size of filter components.

7. The photovoltaic system of claim 1 comprising a power output in a range from about three kilowatts to about five kilowatts.

8. A photovoltaic system comprising:
a photovoltaic array; and
a full-bridge inverter electrically coupled to said photovoltaic array, said full bridge inverter comprising first and second legs arranged to energize at least two phases of a grid electrically coupled to said photovoltaic system, said full-bridge inverter further comprising a filter for removing ripple current that may be present in each of said first and second legs, said filter comprising a respective inductor in series circuit in each inverter leg and a common capacitor in a parallel circuit between said inverter legs.

9. The photovoltaic system of claim 8 wherein said photovoltaic array is electrically floating, and a neutral of the grid is electrically grounded.

10. The photovoltaic system of claim 8 wherein said photovoltaic array comprises a single source.